Patent Claims:

1. A circuit arrangement for DC-isolated transmission of an analog input variable by means of a signal transformation part, having a voltage input and a voltage output, and in particular also for voltage matching between the voltage input and the voltage output of the circuit arrangement,
characterized
in that the signal transformation part is designed as an inductive signal transformation part (6) and the circuit arrangement is provided with a charging and discharging arrangement having a switching element (S1) in such a way that, as a result of the switching element (S1) being actuated, a charging or discharging current (i1, i2) that is proportional to an input voltage (U1) and flows through the signal transformation part (6) occurs and an output voltage (U3) is established at the voltage output.

2. The circuit arrangement as claimed in claim 1,
characterized
by two circuit parts (2, 3) that are DC-isolated from the signal transformation part (6).

3. The circuit arrangement as claimed in claim 1 or 2,
characterized
in that the charging and discharging arrangement has an inductive energy store formed from the signal transformation part (6) with a first and second winding (W1, W2) - in particular with a core made of magnetizable material - , the switching element (S1) being connected up between the voltage output and the second winding (W2) of the signal transformation part (6) in such a way that the switching element (S1) forms

a sampling circuit part enabling a DC-isolated sampling of a voltage (Uc1).

4. The circuit arrangement as claimed in claim 3, characterized
in that the switching element (S1) is connected to a winding end of the signal transformation part (6) by one of its switching ends (7) and to ground or zero volts by its other switching end (8).

5. The circuit arrangement as claimed in one of the preceding claims,
characterized
in that a differential amplifier (V1) is connected up by its differential inputs to output-side winding ends (9, 10) of the signal transformation part (6), the output of the differential amplifier (V1) forming the voltage output with the output voltage (U3).

6. The circuit arrangement as claimed in one of the preceding claims,
characterized
in that the charging and discharging arrangement has a smoothing capacitor (C1).

7. The circuit arrangement as claimed in claim 6, characterized
in that the smoothing capacitor (C1) is electrically connected up between an electrical resistor (R2) connected in parallel with it and a winding (W1) on a winding side of the voltage input of the signal transformation part (6), a rectifying element (D1) - in particular a diode - being connected between the smoothing capacitor (C1) and the winding (W1) in such a way that it assumes a turned-off state in the case of a charging operation, and a charging resistor (R1) being connected upstream of the smoothing capacitor (C1).

8. The circuit arrangement as claimed in claim 6 or 7,
characterized
in that the switching element (S1) is connected up to an output-side winding side of the voltage output in such a way that the smoothing capacitor (C1) is charged and discharged by the switching element (S1) being switched on and off, respectively.

9. The circuit arrangement as claimed in one of claims 6 to 8,
characterized
in that a sampling frequency achieved by repeated opening and closing of the switching element (S1) is dimensioned in such a way that, through discharging of the smoothing capacitor (C1), a voltage increase occurring at the smoothing capacitor (C1) is possible by means of the resistor (R2).

10. The circuit arrangement as claimed in one of the preceding claims,
characterized by
a matching circuit part for matching an output voltage to an input voltage, which matching circuit part is connected between the voltage input (4) and a first winding (W1) of the inductive signal transformation part (6).

11. The circuit arrangement as claimed in claim 10,
characterized
in that the matching circuit part has a series circuit comprising electrical resistors (R1, R2) that are connected to form a voltage divider.

12. The circuit arrangement as claimed in claim 11,
characterized
in that the voltage divider has a division ratio of approximately 1:2 and the inductive signal

transformation part has a turns ratio (ü) of approximately ü = 1.

13. The circuit arrangement as claimed in one of claims 10 to 12,
characterized by
a design on the input side for a voltage range of approximately 0 to 10 volts and on the output side for a voltage range of approximately 0 to 5 volts, a linear signal transmission being effected at least in these ranges.

14. The circuit arrangement as claimed in one of the preceding claims,
characterized
in that the inductive signal transformation part (6) has a primary winding and a secondary winding, which are wound around a closed magnetic core.

15. The circuit arrangement as claimed in one of the preceding claims,
characterized
in that the switching element (S1) is a semiconductor switching element - preferably a transistor.

16. A control unit having a circuit arrangement as claimed in one of the preceding claims.

17. A regulator having a circuit arrangement as claimed in one of the preceding claims.

18. The regulator as claimed in claim 17,
characterized by
a design as a rotational speed regulator of an electric motor - in particular of a commutatorless DC motor.

19. A method for the DC-isolated transmission of a voltage signal from an input side to an output side,

characterized by
an inductive sampling of a charged voltage signal (Uc1) from the DC-isolated output side.

20. The method as claimed in claim 19,
characterized by
a switch-on operation of a switching element (S1), in the case of which a primary current (i2) through an output-side winding (W2) of an inductive signal transformation part rises in ramped fashion, and also a switch-off operation of the switching element (S1), in the case of which the primary current (i2) falls to zero and then a secondary current flows in an input-side winding (W1) in a manner falling in ramped fashion.